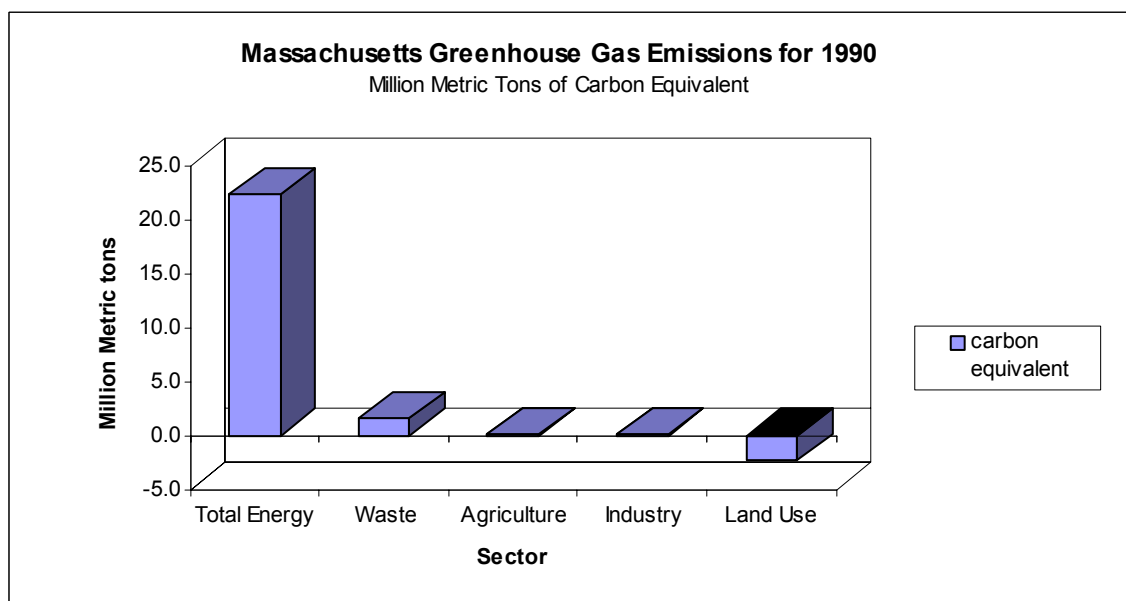


MASSACHUSETTS GREENHOUSE GAS EMISSIONS AND SINKS INVENTORY: SUMMARY



The report “*Massachusetts 1990 Greenhouse Gas Inventory*” provides a detailed inventory of greenhouse gas emissions and sinks for Massachusetts in 1990. Emissions were estimated using methods from EPA’s 1995 guidance document ***State Workbook: Methodologies for Estimating Greenhouse Gas Emissions***. In 1990, Massachusetts emitted 21.7 million metric tons of carbon equivalent (MMTCE). Massachusetts estimated emissions of more than 4.8 MMTCE from biomass fuels and other sources. Emissions from these sources are not included in the reported total or the table below.^{1,2}

The principal greenhouse gases were carbon dioxide, comprising 73.4 million metric tons (20.0 MMTCE), and methane, with 0.2 million metric tons (1.1 MMTCE). Other emissions included approximately 6,300 metric tons of nitrous oxide (0.5 MMTCE).

¹ Note that the state of the art emission inventory method has advanced since Massachusetts completed its inventory; therefore, we have made the following adjustments to Massachusetts’ emission estimates. First, we excluded emission estimates for sources not covered by the most recent inventory guidance (<http://www.epa.gov/ttn/chief/eiip/techreport/volume08/index.html>). These emissions include flaring landfill gas and “upstream” fossil fuel production. (Upstream emissions are generated during the extraction, processing, transportation, and distribution of fuel that is consumed within Massachusetts but produced elsewhere.) Second, we used updated values for global warming potentials.

² In addition, the Massachusetts inventory estimated emissions of non-methane volatile organic compounds, carbon monoxide, and nitrogen oxides, which are greenhouse gases for which global warming potentials have not yet been developed.

Massachusetts Greenhouse Gas Emissions for 1990

BY SECTOR	CO ₂ (MMTCE)	Methane (MMTCE)	Nitrous Oxide (MMTCE)	HFCs, PFCs, and SF6 (MMTCE)	Total GHG Emissions (MMTCE)
Energy - Residential	3.5	*	*	*	3.5
Energy - Commercial	2.4	*	*	*	2.4
Energy - Industrial	1.2	*	*	*	1.2
Energy - Transport	7.8	*	*	*	7.8
Energy - Utility	6.2	*	*	*	6.2
Energy - Exported Electricity	0.6	*	*	*	0.6
Energy - Other	*	0.0	0.5	*	0.6
Total Energy	21.8	0.0	0.5	*	22.4
Waste	0.5	1.1	*	*	1.5
Agriculture	*	0.0	0.0	*	0.0
Industry	0.0	*	*	*	0.0
Land Use	-2.3	*	*	*	-2.3
Total	20.0	1.1	0.5	*	21.7

All emissions are reported in million metric tons of carbon equivalent (MMTCE).

An asterisk (*) indicates that emissions of the gas from this sector were zero, insignificant, or not reported.

Emissions due to coal mining and extraction of natural gas and oil are included in the total energy figures, and emissions from biofuel combustion are excluded.

The major source of carbon dioxide emissions was fossil fuel combustion (98%). Emissions from waste combustion (2%) and lime manufacturing and limestone use (<1%) comprised the remainder of the carbon dioxide emissions. Carbon dioxide sinks (i.e., an increase in forest carbon storage) offset about 10% of the total carbon dioxide emissions. Contributors to methane emissions included landfills (91%), domesticated animals and manure management (4%), fossil fuel combustion (3%) and wastewater treatment (2%). The primary source of nitrous oxide emissions was fossil fuel combustion (>99%), with minor emissions from fertilizer use (<1%).

Massachusetts's emissions in 1990 were 3.6 MTCE per capita, compared to 1990 U.S. emissions of 6.4 MTCE per capita.